US005737330A

United States Patent [19]

Fulthorp et al.

[11] **Patent Number:** 5,737,330

[45] **Date of Patent:** Apr. 7, 1998

[54] **SYSTEM AND METHOD FOR THE EFFICIENT CONTROL OF A RADIO COMMUNICATIONS NETWORK**

[75] Inventors: **Richard J. Fulthorp; Dale K. Smith,** both of Renton; **David A. Fulthorp,** Seattle; **Thomas G. Donich,** Federal Way, all of Wash.

[73] Assignee: **Meteor Communications Corporation,** Kent, Wash.

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,499,386	3/1996	Karlsson	455/56.1
5,581,802	12/1996	Erickson et al.	455/54.2
5,613,205	3/1997	Dufour	455/56.1

[57] **ABSTRACT**

A technique for optimizing throughput on a communications channel shared by multiple users. A communications channel that must be shared by a large number of devices has the potential of being very inefficient because of collisions or overlapping of transmissions by the various devices. The system combines a carrier sense, multiple access (CSMA) mode with a time division multiple access (TDMA) mode to achieve a channel utilization greater than 90 percent. The remote units send a poll request to a base station using the CSMA mode and receive a poll signal from the base station with a poll sequence. The remote units send their data in their assigned time slot. The remote units do not have to all be in radio contact with each other to maintain synchronization. Each remote unit selects the base station that it wishes to communicate with based on signal strength of various base stations. The remote units may switch from one base station to another by addressing the selected base station and using the selected base station's synchronization data pattern in radio transmissions from the remote unit. The synchronization data pattern may be different for each base station or may be identical for groups of base stations to provide broader regional control of the communications network. The base station will only communicate with remote units using the synchronization code for that base station. The system also recovers data from a more powerful signal that collides with a weaker signal by examining the received data for the synchronization code from the more powerful signal.

42 Claims, 16 Drawing Sheets

NOTE: THIS IS THE RECEPTION CAPTURE FLOW CHART (400-434)